Duplicate

SEQUENCE LISTING

<110> EXELIXIS, INC.

<120> INSECT P53 TUMOR SUPPRESSOR GENES AND PROTEINS

<130> EX00-015C FIRST AMENDMENT

<140> US 09/524,101
<141> 2000-03-13

<150> US 09/268,969
<151> 1999-03-16

<150> US 60/184,373
<151> 2000-02-23

<160> 32

<170> PatentIn version 3.1

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35 40 45

Gln Gly Leu Asn Ser Gly Asn Leu Met Gln Phe Ser Gln Gln Ser Val
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Leu Arg Glu Met Met Leu Gln Asp Ile Gln Ile Gln Ala Asn Thr Leu
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Pro Lys Leu Glu Asn His Asn Ile Gly Gly Tyr Cys Phe Ser Met Val
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Leu Asp Glu Pro Pro Lys Ser Leu Trp Met Tyr Ser Ile Pro Leu Asn

100 105 110

Lys Leu Tyr Ile Arg Met Asn Lys Ala Phe Asn Val Asp Val Gln Phe
115 120 125

Lys Ser Lys Met Pro Ile Gln Pro Leu Asn Leu Arg Val Phe Leu Cys
130 135 140

Phe Ser Asn Asp Val Ser Ala Pro Val Val Arg Cys Gln Asn His Leu
145 150 155 160

Ser Val Glu Pro Leu Thr Ala Asn Asn Ala Lys Met Arg Glu Ser Leu
165 170 175

Leu Arg Ser Glu Asn Pro Asn Ser Val Tyr Cys Gly Asn Ala Gln Gly
180 185 190

Lys Gly Ile Ser Glu Arg Phe Ser Val Val Val Pro Leu Asn Met Ser
195 200 205

Arg Ser Val Thr Arg Ser Gly Leu Thr Arg Gln Thr Leu Ala Phe Lys
210 215 220

Phe Val Cys Gln Asn Ser Cys Ile Gly Arg Lys Glu Thr Ser Leu Val
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Phe Cys Leu Glu Lys Ala Cys Gly Asp Ile Val Gly Gln His Val Ile
245 250 255

His Val Lys Ile Cys Thr Cys Pro Lys Arg Asp Arg Ile Gln Asp Glu
260 265 270

Arg Gln Leu Asn Ser Lys Lys Arg Lys Ser Val Pro Glu Ala Ala Glu
275 280 285

Glu Asp Glu Pro Ser Lys Val Arg Arg Cys Ile Ala Ile Lys Thr Glu
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Asp Thr Glu Ser Asn Asp Ser Arg Asp Cys Asp Asp Ser Ala Ala Glu
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Trp Asn Val Ser Arg Thr Pro Asp Gly Asp Tyr Arg Leu Ala Ile Thr
325 330 335

Cys Pro Asn Lys Glu Trp Leu Leu Gln Ser Ile Glu Gly Met Ile Lys
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Arg His Ala Asn Lys Leu Leu Ser Leu Lys Lys Arg Ala Tyr Glu Leu
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Pro
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Asp Glu Pro Thr Leu Asn Asp Leu Asn Tyr Ser Asn Ile Leu Asn Gly
35 40 45

Ser Ile Val Ala Asn Asp Asp Ser Lys Met Val His Leu Ile Phe Pro
50 55 60

Gly Val Gln Thr Ser Val Pro Ser Asn Asp Glu Tyr Asp Gly Pro Tyr
65 70 75 80

Glu Phe Glu Val Asp Val His Pro Thr Val Ala Lys Asn Ser Trp Val
85 90 95

Tyr Ser Thr Thr Leu Asn Lys Val Tyr Met Thr Met Gly Ser Pro Phe
100 105 110

Pro Val Asp Phe Arg Val Ser His Arg Pro Pro Asn Pro Leu Phe Ile
115 120 125

Arg Ser Thr Pro Val Tyr Ser Ala Pro Gln Phe Ala Gln Glu Cys Val
130 135 140

Tyr Arg Cys Leu Asn His Glu Phe Ser His Lys Glu Ser Asp Gly Asp
145 150 155 160

Leu Lys Glu His Ile Arg Pro His Ile Ile Arg Cys Ala Asn Gln Tyr
165 170 175

Ala Ala Tyr Leu Gly Asp Lys Ser Lys Asn Glu Arg Leu Ser Val Val
180 185 190

Ile Pro Phe Gly Ile Pro Gln Thr Gly Thr Glu Ser Val Arg Glu Ile
195 200 205

Phe Glu Phe Val Cys Lys Asn Ser Cys Pro Ser Pro Gly Met Asn Arg
210 215 220

Arg Ala Val Glu Ile Ile Phe Thr Leu Glu Asp Asn Gln Gly Thr Ile
225 230 235 240

Tyr Gly Arg Lys Thr Leu Asn Val Arg Ile Cys Ser Cys Pro Lys Arg
245 250 255

Asp Lys Glu Lys Asp Glu Lys Asp Asn Thr Ala Asn Thr Asn Leu Pro
260 265 270

His Gly Lys Lys Arg Lys Met Glu Lys Pro Ser Lys Lys Pro Met Gln
275 280 285

Thr Gln Ala Glu Asn Asp Thr Lys Glu Phe Thr Leu Thr Ile Pro Leu
290 295 300

Val Gly Arg His Asn Glu Gln Asn Val Leu Lys Tyr Cys His Asp Leu
305 310 315 320

Met Ala Gly Glu Ile Leu Arg Asn Ile Gly Asn Gly Thr Glu Gly Pro
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Tyr Lys Ile Ala Leu Asn Lys Ile Asn Thr Leu Ile Arg Glu Ser Ser
340 345 350

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<212> DNA
<213> Tribolium castaneum

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aataatgcac gaaaacaacg tccatttagt aaatgacgac ggagaagaag aaaaatactc 240

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cgtggccttc tccgtgcaaa accgccccca gaacctgccc ctctacatcc gcgccacccc 480

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caccaacgac aacgccctat actttggcga taaaaacaca gggacgagac tcaacatcgt 660

cctgcctttg gcccaccccc aggtggggga ggacgtggtc aaggagtttt tccagtttgt 720

gtgcaaaaac tcctgccctt tggggatgaa tcggcggccg attgatgtcg ttttcaccct 780

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gaagaagagg aagttgggga atgatgagcg aagggttgtg ccacagggga gctccgataa 960

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<212> PRT
<213> Tribolium castaneum

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20 25 30

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35 40 45

Ser Asn Glu Ala Asn Tyr Thr Glu Ser Ile Phe Pro Pro Asp Gln Pro
50 55 60

Thr Asn Leu Gly Thr Glu Glu Tyr Pro Gly Pro Phe Asn Phe Ser Val
65 70 75 80

Leu Ile Ser Pro Asn Glu Gln Lys Ser Pro Trp Glu Tyr Ser Glu Lys
85 90 95

Leu Asn Lys Ile Phe Ile Gly Ile Asn Val Lys Phe Pro Val Ala Phe
100 105 110

Ser Val Gln Asn Arg Pro Gln Asn Leu Pro Leu Tyr Ile Arg Ala Thr
115 120 125

Pro Val Phe Ser Gln Thr Gln His Phe Gln Asp Leu Val His Arg Cys
130 135 140

Val Gly His Arg His Pro Gln Asp Gln Ser Asn Lys Gly Val Ala Pro
145 150 155 160

His Ile Phe Gln His Ile Ile Arg Cys Thr Asn Asp Asn Ala Leu Tyr
165 170 175

Phe Gly Asp Lys Asn Thr Gly Thr Arg Leu Asn Ile Val Leu Pro Leu
180 185 190

Ala His Pro Gln Val Gly Glu Asp Val Val Lys Glu Phe Phe Gln Phe
195 200 205

Val Cys Lys Asn Ser Cys Pro Leu Gly Met Asn Arg Arg Pro Ile Asp
210 215 220

Val Val Phe Thr Leu Glu Asp Asn Lys Gly Glu Val Phe Gly Arg Arg
225 230 235 240

Leu Val Gly Val Arg Val Cys Ser Cys Pro Lys Arg Asp Lys Asp Lys
245 250 255

Glu Glu Lys Asp Met Glu Ser Ala Val Pro Pro Arg Arg Lys Lys Arg
260 265 270

Lys Leu Gly Asn Asp Glu Arg Arg Val Val Pro Gln Gly Ser Ser Asp
275 280 285

Asn Lys Ile Phe Ala Leu Asn Ile His Ile Pro Gly Lys Lys Asn Tyr
290 295 300

Leu Gln Ala Leu Lys Met Cys Gln Asp Met Leu Ala Asn Glu Ile Leu
305 310 315 320

Lys Lys Gln Glu Gln Gly Gly Asp Asp Ser Ala Asp Lys Asn Cys Tyr
325 330 335

Asn Glu Ile Thr Val Leu Leu Asn Gly Thr Ala Ala Phe Asp
340 345 350

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<212> DNA
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gaattggtgc ataggtgcat ctgtcacgaa caattgacag atccgaccaa tcacaacgtt 420

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gataagaacg ctgggaagag actgagta 508

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<213> Tribolium castaneum

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Ser Ser Tyr Leu Ser Ala Pro Ile Phe Pro Pro Ser Glu Pro Leu Glu

35 40 45

Leu Cys Asn Thr Glu Tyr Pro Gly Pro Leu Asn Phe Glu Val Phe Val
50 55 60

Asp Pro Asn Val Leu Lys Asn Pro Trp Glu Tyr Ser Pro Ile Leu Asn
65 70 75 80

Lys Ile Tyr Ile Asp Met Lys His Lys Phe Pro Ile Asn Phe Ser Val
85 90 95

Lys Lys Ala Asp Pro Glu Arg Arg Leu Phe Val Arg Val Met Pro Met
100 105 110

Phe Glu Glu Asp Arg Tyr Val Gln Glu Leu Val His Arg Cys Ile Cys
115 120 125

His Glu Gln Leu Thr Asp Pro Thr Asn His Asn Val Ser Glu Met Val
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Ala Gln His Ile Ile Arg Cys Asp Asn Asn Asn Ala Gln Tyr Phe Gly
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Asp Lys Asn Ala Gly Lys Arg Leu Ser
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<212> PRT
<213> Heliothis virescens

<400> 10

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20 25 30

Thr Gln Ala Glu Lys Arg Val Glu Arg Cys Val Gln His Phe His Glu
35 40 45

Ser Ser Thr Ser Gly Ile Gln Thr Glu Ile Ala Lys Asn Val Leu His
50 55 60

Ser Ser Arg Glu Ile Gly Thr Gln Gly Val Tyr Tyr Cys Gly Lys Val
65 70 75 80

Asp Met Ala Asp Ser Trp Tyr Ser Val Leu Val Glu Phe Met Arg Thr
85 90 95

Ser Ser Glu Ser Cys Ser His Ala Tyr Gln Phe Ser Cys Lys Asn Ser
100 105 110

Cys Ala Thr Gly Ile Asn Arg Arg Ala Ile Ala Ile Ile Phe Thr Leu
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Glu Asp Ala Met Gly Asn Ile His Gly Arg Gln Lys Val Gly Ala Arg
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<212> DNA
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tgactttctt agacccgatc ccttttcgac tttcccctct ttcacccagt ttagatccct 1620

cgcttctatg gttataggtc gtcagttttc atttaaagtt tctgtacaaa caatatcttt 1680

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<213> Drosophila melanogaster

<400> 20

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Gln Arg Gln Leu Ser Arg Ile Arg Asp Ile Asp Val Gln Tyr Arg Gly
35 40 45

Leu Ile Arg Asp Val Asp His Tyr Tyr Asp Leu Tyr Leu Ser Leu Gln
50 55 60

Asn Ser Ala Asp Ala Gly Arg Arg Ser Arg Ser Ile Ser Arg Met His
65 70 75 80

Gln Ser Leu Ile Gln Ala Gln Glu Leu Gly Asp Glu Lys Met Gln Ile
85 90 95

Val Asn His Met Gln Glu Ile Ile Asp Gly Lys Leu Arg Gln Leu Asp
100 105 110

Thr Asp Gln Gln Asn Leu Asp Leu Lys Glu Asp Arg Asp Arg Tyr Ala
115 120 125

Leu Leu Asp Asp Gly Thr Pro Ser Lys Leu Gln Arg Leu Gln Ser Pro
130 135 140

Met Arg Glu Gln Gly Asn Gln Ala Gly Thr Gly Asn Gly Gly Leu Asn
145 150 155 160

Gly Asn Gly Leu Leu Ser Ala Lys Asp Leu Tyr Ala Leu Gly Gly Tyr
165 170 175

Ala Gly Gly Val Val Pro Gly Ser Asn Ala Met Thr Ser Gly Asn Gly
180 185 190

Gly Gly Ser Thr Pro Asn Ser Glu Arg Ser Ser His Val Ser Asn Gly
195 200 205

Gly Asn Ser Gly Ser Asn Gly Asn Ala Ser Gly Gly Gly Gly Gly Glu
210 215 220

Leu Gln Arg Thr Gly Ser Lys Arg Ser Arg Arg Arg Asn Glu Ser Val
225 230 235 240

Val Asn Asn Gly Ser Ser Leu Glu Met Gly Gly Asn Glu Ser Asn Ser
245 250 255

Ala Asn Glu Ala Ser Gly Ser Gly Gly Gly Ser Gly Glu Arg Lys Ser
260 265 270

Ser Leu Gly Gly Ala Ser Gly Ala Gly Gln Gly Arg Lys Ala Ser Leu
275 280 285

Gln Ser Ala Ser Gly Ser Leu Ala Ser Gly Ser Ala Ala Thr Ser Ser
290 295 300

Gly Ala Ala Gly Gly Gly Gly Ala Asn Gly Ala Gly Val Val Gly Gly
305 310 315 320

Asn Asn Ser Gly Lys Lys Lys Lys Arg Lys Val Arg Gly Ser Gly Ala
325 330 335

Ser Asn Ala Asn Ala Ser Thr Arg Glu Glu Thr Pro Pro Pro Glu Thr
340 345 350

Ile Asp Pro Asp Glu Pro Thr Tyr Cys Val Cys Asn Gln Ile Ser Phe
355 360 365

Gly Glu Met Ile Leu Cys Asp Asn Asp Leu Cys Pro Ile Glu Trp Phe

370 375 380

His Phe Ser Cys Val Ser Leu Val Leu Lys Pro Lys Gly Lys Trp Phe
385 390 395 400

Cys Pro Asn Cys Arg Gly Glu Arg Pro Asn Val Met Lys Pro Lys Ala
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Gln Phe Leu Lys Glu Leu Glu Arg Tyr Asn Lys Glu Lys Glu Glu Lys
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Thr

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<211> 2666
<212> DNA
<213> Drosophila melanogaster

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agaattcagc aaagcgctct gtccacctac catcgcttgg atgcggtcaa cgggctgtcc 240

accagcgagg cagatgccca ggagtggctg tgttgcgccg tctacagcga actgcagcgc 300

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gaggttgagg aactgcgttg tcgacttggt attacttcga cgctgctgcg gcattataag 540

cacatctttc ggagcctgtt cgttcacccg gcaagggtgc ggacccgggt gccgcgaatc 600

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ccggttttgc gattacaaac ctgatcaacg gctgtcaggt gctcgtttgc acaatggatc 720

tccttttcgt gaacgcctta gaggtgcccc gatccgtagt tatccgccgg gagttctctg 780

gagtgcccaa gaattgggac accgaagact tcaatcctat tttgctaaat aaatatagcg 840

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agaacgcctt tttccacaaa gccttaataa tgctctatat ggaccatagt ctagttggag 960

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tccaccacaa actagtggaa ggcctaaggt ttccctttgt cctgcactgc ttttcactgg 1560

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attcctttcc ccaaatatgg cacctggccg agcactcttt caccttagag agtagccgtc 1920

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Ile Arg Arg Glu Phe Ser Gly Val Pro Lys Asn Trp Asp Thr Glu Asp
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Phe Asn Pro Ile Leu Leu Asn Lys Tyr Ser Val Leu Glu Ala Leu Gly
35 40 45

Glu Leu Ile Pro Glu Leu Pro Ala Lys Gly Val Val Gln Met Lys Asn
50 55 60

Ala Phe Phe His Lys Ala Leu Ile Met Leu Tyr Met Asp His Ser Leu
65 70 75 80

Val Gly Asp Asp Thr His Met Arg Glu Ile Ile Lys Glu Gly Met Leu
85 90 95

Asp Ile Asn Leu Glu Asn Leu Asn Arg Lys Tyr Thr Asn Gln Val Ala
100 105 110

Asp Ile Ser Glu Met Asp Glu Arg Val Leu Leu Ser Val Gln Gly Ala
115 120 125

Ile Glu Thr Lys Gly Asp Ser Pro Lys Ser Pro Gln Leu Ala Phe Gln
130 135 140

Thr Ser Ser Ser Pro Ser His Arg Lys Leu Ser Thr His Asp Leu Pro
145 150 155 160

Ala Ser Leu Pro Leu Ser Ile Ile Lys Ala Phe Pro Lys Lys Glu Asp
165 170 175

Ala Asp Lys Ile Val Asn Tyr Leu Asp Gln Thr Leu Glu Glu Met Asn
180 185 190

Arg Thr Phe Thr Met Ala Val Lys Asp Phe Leu Asp Ala Lys Leu Ser
195 200 205

Gly Lys Arg Phe Arg Gln Ala Arg Gly Leu Tyr Tyr Lys Tyr Leu Gln
210 215 220

Lys Ile Leu Gly Pro Glu Leu Val Gln Lys Pro Gln Leu Lys Ile Gly
225 230 235 240

Gln Leu Met Lys Gln Arg Lys Leu Thr Ala Ala Leu Leu Ala Cys Cys
245 250 255

Leu Glu Leu Ala Leu His Val His His Lys Leu Val Glu Gly Leu Arg
260 265 270

Phe Pro Phe Val Leu His Cys Phe Ser Leu Asp Ala Tyr Asp Phe Gln
275 280 285

Lys Ile Leu Glu Leu Val Val Arg Tyr Asp His Gly Phe Leu Gly Arg
290 295 300

Glu Leu Ile Lys His Leu Asp Val Val Glu Glu Met Cys Leu Glu Ser
305 310 315 320

Leu Ile Phe Arg Lys Ser Ser Gln Leu Trp Trp Glu Leu Asn Gln Arg
325 330 335

Leu Pro Arg Tyr Lys Glu Val Asp Ala Glu Thr Glu Asp Lys Glu Asn
340 345 350

Phe Ser Thr Gly Ser Ser Ile Cys Leu Arg Lys Phe Tyr Gly Leu Ala
355 360 365

Asn Arg Arg Leu Leu Leu Leu Cys Lys Ser Leu Cys Leu Val Asp Ser
370 375 380

Phe Pro Gln Ile Trp His Leu Ala Glu His Ser Phe Thr Leu Glu Ser
385 390 395 400

Ser Arg Leu Leu Arg Asn Arg His Leu Asp Gln Leu Leu Leu Cys Ala
405 410 415

Ile His Leu His Val Arg Leu Glu Lys Leu His Leu Thr Phe Ser Met

420 425 430

Ile Ile Gln His Tyr Arg Arg Gln Pro His Phe Arg Arg Ser Ala Tyr
435 440 445

Arg Glu Val Ser Leu Gly Asn Gly Gln Thr Ala Asp Ile Ile Thr Phe
450 455 460

Tyr Asn Ser Val Tyr Val Gln Ser Met Gly Asn Tyr Gly Arg His Leu
465 470 475 480

Glu Cys Ala Gln Thr Arg Lys Ser Leu Glu Glu Ser Gln Ser Ser Val
485 490 495

Gly Ile Leu Thr Glu Asn Asn Phe Gln Arg Ile Glu His Glu Ser Gln
500 505 510

His Gln His Ile Phe Thr Ala Pro Ser Gln Gly Met Pro Lys Trp Leu
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Ala Lys Leu Ala Gln Arg Lys Ala Cys Cys Phe Glu
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<400> 31

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<400> 32

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